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Fall, 1945

"Let There Be Sight"

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The Sight-Saving Review

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Cataracts*

Truman L. Boyes, M.D.

THIS subject, which is of concern to a broad group of the population, is presented in simple and understandable language.

PROBABLY more people have heard of cataracts than of any other eye condition. Perhaps the reason is that almost a third of the blind population over sixty years of age are blind because of cataracts. Cataracts have been known as far back as history is recorded. The word cataract itself dates back hundreds of years—our distant forefathers, noticing that the whitened area within the normally black pupil resembled the white spray of a waterfall, described the opaque lens as a cataract—and this word continues in our use. Despite the fact that cataracts are a major cause of blindness, it should not be assumed that all cataracts are linked with blindness. Among cataracts themselves, various forms must be distinguished and different treatments are required.

The eye is a small, round ball about the size of a walnut. The circular, transparent area of the front part of the eye is the cornea; a short distance behind the cornea is the iris, of brown or blue color, with a normally black center—the pupil. As more or less light comes within the eye, the iris changes in size so that a small or large pupil results, the size of the pupil depending upon the amount of light outside the eye. Directly behind and virtually touching the iris is the crystalline lens. The crystalline lens changes in shape, depending upon whether the eye is focused for distant or near objects.

Normally, light passes directly through the cornea and lens, just as it goes through two pieces of windowpane. However, when the inside windowpane is of frosted glass, a condition exists comparable

* Radio address given over Station WNYC, under the auspices of the Medical Society of the County of New York, May 31, 1945, and reprinted with permission from *Hygeia*, January, 1946.

to the condition in the eye when a cataract is present. Frosted glass breaks up light rays in a manner virtually the same as a mature, ripe cataract. Light can still pass through the frosted glass or a cataract, but reading through either is impossible.

Although a cataractous lens may prevent good vision, the inside back portion of the eye—called the retina—is not damaged because of the unused lens. Light projection, therefore, is not changed, and removal of the cataract should give a satisfactory result. If the retina or back part of the eye has been damaged by disease, removal of the cataract would be useless.

Every crystalline lens has a nucleus, or vital center, and this nucleus begins to age at birth. This aging process takes place spontaneously, without any injury, progresses slowly, and is normal with increasing age. The eyes of middle-aged persons undergo this normal, nonpathological change, and it is corrected by the use of glasses.

Changes in the crystalline lens of an eye occur without pain and come on so gradually that the alteration in vision may not be noticed until it is fairly well advanced. These changes may even be so slow that never within the lifetime of a person will any treatment be required other than the frequent changing of glasses.

On the other hand, the rate of progression—especially in persons over fifty—may be fairly rapid, reaching its culmination as a cataract within a year or two. Normally, from five to ten years are required before complete maturity of a cataract. Definite knowledge of why cataracts form in one person's eyes and not in another's has not been determined, although we know certain diseases, notably diabetes, cause a disturbed nutrition within the entire body and promote the formation of cataracts within a few months.

Cataracts may, and do, occur at any age. Those frequently observed are: (1) the congenital cataracts in young children; (2) the cataracts due to injury to the lens; and (3) the so-called senile cataracts, found in middle-aged and elderly people. Congenital and senile cataracts are occasionally spoken of as primary cataracts, because they usually occur without other diseases of the eye and their cause is not well understood. Many cataracts are called secondary because they start during, or after, some inflammation in the eye, or a disease of the general system; such cataracts

commonly occur in glaucoma—or hardening of the eyeball—and in certain diseases of the iris or retina.

A frequent question asked in regard to cataract is the influence of heredity. Heredity does play a part in many cases of congenital cataracts. In the commonest type of cataract—the senile—heredity has an influence, since there is a definite family tendency toward longevity—or old age—and cataracts affect a fair percentage of elderly people. Hence, the longer they live, the more apt they are to have cataracts.

The idea that it is necessary for an eye surgeon to wait until a cataract develops to a certain point before operating is one of the prevalent false conceptions regarding cataracts. The eye surgeon classifies cataracts according to their stage of cloudiness as (1) beginning, or incipient, cataracts, (2) immature, or unripe, cataracts, (3) mature, or ripe, cataracts, and (4) overripe cataracts. In the days of our grandfathers it was customary to allow the cataract to become ripe, or completely clouded, before removal was attempted.

Under modern methods of treatment the individual with a cataract can forget all about whether or not it is ripe. He is assured that today there is no need to sit around in a state of partial blindness waiting for a cataract to become ripe. The modern eye surgeon is able to, and should, remove a cataract as soon as the vision has been reduced to a point where it no longer permits the patient to continue his usual occupation. Many people ask why cataracts are sometimes removed by one operation, and, in other cases, a so-called preliminary operation is performed. The reason is simply that the eye surgeon is trying to produce results with the least possible risk to the patient. If the cataract is a complicated one, or if the patient has only one eye, doing a preliminary operation is being conservative. In any question of this kind it is best to follow the advice of the attending eye physician.

If a patient's general health is good, age is not a contraindication for operation. There is no surgical shock or severe discomfort in these operations and they are done under local anesthesia. Cases that are not operable are those in which there is definite evidence of other disease in the eye which would prevent a good visual result, even though the operation, from a technical viewpoint, was perfect.

After a patient has had a cataract removed, the period of disability usually averages about one month. From ten to fourteen days are required in a hospital. Operations for the removal of cataracts should not be done in patients' homes or doctors' offices. The chances of complications are greatly increased, and such surgical methods are condemned by the outstanding members of the medical profession.

It should be clearly understood that everything which interferes with, or reduces, vision is not a cataract. There are many other afflictions of the eye. The first step when there are signs of eye difficulty should be to have a complete eye examination, for delay may be fatal to sight, and many eye troubles can be cured, or arrested, if cared for in time.

Methods of Treatment

While certain drugs, especially some weight-reducing medicines or fat oxidizers, have been found to cause cataracts, none has been discovered which will prevent or always retard their progression. Numerous other wishful methods of treatment have been devised, such as eye exercises, heat, and light; but no such treatment has been found that secures a predictable cure in even half of the cases tried.

Nearly all eyes with poor vision as the result of cataract alone can be helped. Many of these eyes may gain normal vision and most, if not all, may gain very useful vision by the removal of the opaque, clouded lens. The method of removal has been so greatly improved that it results satisfactorily in nearly every case. Even statistics of as late as thirty years ago do not show results that can compare with those of today.

Various methods for removal of a cataract are known. In early times, the lenses were depressed away from the pupil into the rear part of the eye. About one hundred years ago, the modern method for removal of cataracts was initiated. At the present time, the crystalline lens, or cataract, is completely removed from the eye. Sometimes the outer of the two covers, or capsules, of the lens is not removed, this being known as the extracapsular method. Sometimes the lens and both capsules are removed at one time; this is known as the intracapsular method. The extracapsular pro-

cedure has has been practiced for many years and can be used in every case of senile cataract. The intracapsular method for removing a lens is a newer development and, in those cases where it can be used, it has some definite advantages over the extracapsular operation. In addition, the great improvements of local anesthesia within the past few years have immensely improved the results of cataract operations.

After the cataractous lens is removed, the eye cannot see well unless a spectacle lens of sufficient strength is used to replace *that* which was formerly supplied by its own crystalline lens. A glass lens is now placed outside the eye and worn just as is an ordinary pair of glasses. If a favorable result is obtained, one pair of glasses is worn for distance and a different pair for near vision, or a bifocal lens may be used, just as in ordinary life. The entire procedure may be stated simply as the removal of a useless cataractous lens, and the substitution of a clear, usable glass lens that is worn as easily as any other pair of glasses.

The prevention, or cure, of poor vision by the removal of a cataractous lens is truly remarkable, almost miraculous—words are inadequate to express the drama of restored sight. An individual who can again use his eyes is elated with his freedom from dependence upon others and with the realization that he has reclaimed the beauties of a world of color, form, and motion.

"Screening," Eye Examinations, and Follow-Up*

PRESENTS descriptions of various vision tests and procedures, as well as a discussion of personnel for such procedures.

IMPAIRED vision or blindness can often be prevented, and nervous strain from defective sight relieved, through early recognition, correct diagnosis, and proper treatment of eye conditions. Eye diseases and defects are often present without being recognized either by the individual, or those around him, until considerable damage has resulted either to sight or to efficiency.

Periodic, comprehensive eye examinations are the ideal means of early discovery and diagnosis of such conditions, but, when such a program is not feasible, periodic "screening" tests of vision and observations to note signs of eye trouble are helpful in locating persons needing care. These, however, are gross tests, serving only to indicate the probability, not the proof, of the need of eye care, and are insufficient for diagnosis. This fact should be understood by all concerned—those making the screening, those tested, and all others interested.

After the screening, the need of a proper examination for those suspected of having eye difficulties must be recognized; guidance and assistance should be offered in planning and making the necessary arrangements. After the examination, in carrying out recommendations, encouragement and help may also be needed for an indefinite period of time.

A program for early diagnosis and care of eye conditions includes:

1. Early discovery through periodic screening of groups of individuals.

* Chapter V of forthcoming volume, *Eye Health—A Teaching Handbook for Nurses*, published by the National Society for the Prevention of Blindness.

2. Comprehensive eye examination for each one who seems to have any visual or eye difficulty.
3. Follow-up to aid in securing eye examinations and in carrying out recommendations.

Screening for Eye Difficulties

Visual screening programs require:

1. Co-operation of all concerned.
2. Careful selection and preparation of personnel to give tests, observe reactions, and explain follow-up procedures.
3. Provision for the use of suitable, standardized procedures and equipment for testing, with proper facilities for conducting the tests.
4. Careful interpretation of screening procedures, results and recommendations to all undergoing the tests.

Even under the most favorable circumstances, a few who need care are likely to be missed; while others may be "screened out" who, on examination, will be found to have no eye difficulty requiring attention. Comparative studies are the only means by which an accurate estimate of this margin of error can be obtained. In such studies, findings of the various tests of a sufficiently large, cross-section sampling of the group screened are compared with those obtained by an eye specialist through a diagnostic examination of the same visual functions as were grossly tested in the screening.

Preparation for Visual Screening Programs.—The first step is to seek help in planning a program which will be practical and valuable. In this, those administratively responsible, eye specialists, and the personnel to do the work, can give the greatest aid. With the administrator rests the responsibility for provision of facilities, selection of personnel, arrangements for necessary training, and the general planning of the program.

Eye specialists can help in the selection of suitable screening procedures, in outlining facilities needed, in training of personnel, and in interpreting the program to their colleagues. Community agencies can assist in planning the follow-up.

Selection and Training of Personnel.—Careful selection and training of the persons who are to make screening tests and observations greatly affect the reliability of the results. The essential qualifications are that they be capable of being instructed: (a) To do the work in an orderly, businesslike, but kindly, manner by making good contacts with the individuals to be screened; (b) to follow instructions carefully and have the necessary knowledge and skills; (c) to be alert to signs of eye difficulty; (d) to keep accurate records; (e) to make such interpretations of their findings as lie within the scope of their functions.

Preparation should include explanation and demonstration of tests and observations, and practice under supervision until proficiency is established.

Personnel for follow-up need equally careful selection and preparation, to assure correct interpretation of the significance of the screening, and provide adequate guidance to sources for a careful examination and such other services as may be required. Persons to do this work therefore should: (a) Be capable of conducting individual interviews skillfully and of interpreting scientific material to individuals with various backgrounds and knowledge; and (b) be familiar with local resources for eye care and the ethical procedures for guiding people to them.

Basic skills for the above usually require a high level of professional preparation, such as that required for public health nursing or for medical social work.

Preparation of the Individuals to be Screened.—Careful interpretation of the purposes and limitations of the screening process, before the tests and observations are made, prevents misunderstandings and paves the way for follow-up. It should be made clear that the screening is not a substitute for an eye examination. When suitable, the difference between a comprehensive examination by a qualified eye specialist and the screening procedures may be pointed out and information may be given about community resources for eye examination and care.

The tests themselves need explanation so that each person knows how to co-operate. For some individuals, especially young children, a preliminary drill is desirable.

Screening Procedures.—Screening procedures must be suited to those to be tested and to the particular situations in which the screening is to be carried out. In selecting those most suitable, the following points should be considered:

1. Signs and symptoms of eye difficulties should be noted, to supplement information obtained from the tests.
2. A battery of tests is needed to measure the performance of various aspects of visual functioning.
3. Only well-recognized tests and procedures should be used for screening; new test methods or devices should be adopted only after careful validation and under proper guidance.
4. Tests and procedures should be suited to particular situations and individuals, necessary adaptations being made under expert guidance.

Observations, Inspection, and Attention to Complaints.—Observation, inspection, and attention to complaints supplement test findings and sometimes provide in themselves sufficient evidence to warrant referral for an eye examination.

Symptoms for which *immediate ophthalmological* care should be sought include:

Swollen, inflamed lids, especially if the eyes are bloodshot and there is a purulent discharge.

Severe ocular pain, with or without redness of the bulbar conjunctiva or sclera.

Any sudden change in vision such as double vision or dimming sight.

Other symptoms which should be investigated include:

Lid irritation, such as sties, crusted and inflamed lid margins.

Signs of fatigue from eye work, such as: discomfort, dizziness, headaches, nausea, scowling, rubbing eyes, frequent blinking, or inability to do close visual work for a reasonable period.

Apparent use of one eye.

Crossed or divergent eyes.

Irregularities of pupils of the eyes, or their failure to react normally to light.

Unusual head positions.

Undue sensitivity to light.

Inability to see distant objects.

Holding of reading material or other fine work unusually *near* or unusually *far* from the eyes to see it clearly.

Proneness to accidents: stumbling over objects in path or failure to appreciate height of steps, getting fingers caught in machines, automobile accidents, etc.

Types of Screening Tests.—Visual functions usually considered most important to test are central visual acuity (distance, near and at working distance), peripheral vision, muscle balance, and color vision. Fusion and depth perception are also sometimes included when vocational guidance is one of the objectives of the screening.

As no one test can measure all of these aspects of vision, it is necessary to use a battery of tests. Such a battery may consist of recognized tests similar to those used in clinical practice, or it may be decided to use a stereoscopic testing device which affords tests of the various functions.

Description of Screening Tests

The following tests* are among those most commonly used for preschool, school and industrial groups:

Snellen.—This is the standard test of distance central visual acuity; for most screening purposes it is considered the most important single test. It consists of reading test objects (letters, numbers or symbols) from a distance of 20 feet. The objects are of graduated sizes and constructed according to scientific optical principles. Each size is numbered to indicate the standard distance at which a person with normal visual acuity should be able to distinguish it. Hence one is said to have "normal" distance central visual acuity if he can see the 20-foot size or smaller from 20 feet away. At the same time it must be remembered that such a standard is not always possible for young children, even when their sight is normal.

For convenience, the results of this test are expressed as a fraction, the numerator indicating the distance from the chart, the denominator, the smallest size objects read correctly. It must always be borne in mind that this is not a fraction, and cannot be

* Detailed outlines of these screening procedures, for children or for adults, are available from the National Society for the Prevention of Blindness.

interpreted to indicate the percentage of visual efficiency. For example, 20/30 indicates only that the 30-foot line is the smallest line read correctly at 20 feet. It represents 91.5 per cent of visual efficiency, according to standard tables of equivalents of visual efficiency. Generally, 20/20 is considered "normal vision." Those with a visual acuity of 20/15, or 20/10, have an unusual degree of visual efficiency.

The chart is placed with the 20-foot line* of test objects approximately at eye level, and, according to many authorities, for screening it should be provided with 8–12 foot-candles of evenly distributed light. A standard chart unit, providing the desired amount of light, is usually more satisfactory than one with improvised illumination. However, as some units are more brightly lighted than others, care should be taken to select one with the desired standard of approximately 10 foot-candles. Portable types are available.† Room lighting should be adjusted to at least one-fifth the amount on the chart, and should be free from glare and sharp shadows.

Each eye is tested separately, with the other completely covered by a clean white card. Then both eyes are tested together. If glasses are worn, testing first with and then without encourages the best performance. Memorizing can be prevented by not having objects read in sequence, or by using cards with holes of proper size to show only one letter at a time.‡

Plus-Lens Test.—The Snellen test shows only the degree of distance visual acuity, without giving clues to the cause when this is low. But as it is possible, with significant amounts of hyperopia, to pass the test as normal or approximately so, some authorities recommend employing a simple test for hyperopia. This is done with a Snellen chart and hyperopic lenses of a specified strength. With this test it is necessary to use only the 20/20 line of the chart,

* When space is limited the test can be made at a distance of 10 feet by using a mirror and a special Snellen chart designed for reverse reading, but this complicates problems of chart and room illumination for proper testing, and causes the chart to be viewed at an unnatural angle.

† Information on portable, lighted chart units is available from the National Society for the Prevention of Blindness.

‡ An inexpensive set of cover and window cards for this purpose is available from the National Society for the Prevention of Blindness.

since if this can be read with the lenses the person is inferred to have at least the degree of hyperopia represented by the strength of the lenses. Hence, ability to read the 20/20 line with the glasses constitutes "failure" in the test. Yet this does not necessarily indicate that the person needs glasses—a matter which can be determined only by a thorough eye examination.*

Tests of Near Vision.—Several types of near-vision test charts are available for testing vision at approximately 14–16 inches. Some have printed paragraphs of graduated size, and others block letters or symbols drawn to Snellen scale, to be read at a stipulated distance. The Jaeger is an example of the former, while the Reading-Rating chart published by the American Medical Association is of the latter type. In recording results, the distance at which the test is given and the type of chart should be indicated. There should be 10 foot-candles of light on the chart and the person should not face a light. As in the Snellen test, each eye is tested separately, then both together, with and without glasses.

Estimating Size of Visual Fields.—A rough measure of the extent of peripheral vision can be obtained by the confrontation test. This consists of ascertaining at what point above, below, and to each side of each eye, a person becomes aware of a large pinhead, which is kept in constant motion, and moved in an arc toward the center of the field of vision. Normally, while the pinhead is not seen clearly, its presence and motion are discerned almost as soon as it passes the bony orbital rim from any direction. This, however, varies somewhat with facial configuration.

Test for Muscle Balance.—For this purpose it is desirable to test: the muscle balance with eyes looking straight ahead; the ability to converge; and the co-ordination of the eyes as they are rotated. For the first of these, either the cover test or a Maddox's rod test may be used. The object of the cover test is to discover if the alignment of the eyes is maintained when one eye is covered briefly while the other is fixed on a bright object. The person looks at a light which,

* This test is included in the battery of tests known as the Massachusetts Vision Test, full instructions and equipment for which are available from the Division of Child Hygiene, Massachusetts Department of Public Health, 73 Tremont Street, Boston, Mass.

for the distance test, is placed 20 feet away, and for the near test at about 14 inches. The tester holds a small card in front of one of the subject's eyes in such a way that the light cannot be seen with that eye, but it can be watched to see if alignment is maintained. After a few seconds the card is shifted to cover the other eye—the eye which was previously covered being watched for a shift in the direction of its gaze. Normally, there should be no change in its position, either while the eye is covered or when the cover is removed.

An ingenious device for using Maddox rods for screening purposes has been developed under the auspices of the Massachusetts Department of Public Health as a part of the battery of tests known as the Massachusetts Vision Test. When a light is viewed through the type of lens known as a Maddox rod, it is seen as a streak of light, its direction being determined by the rods of the lens. In the Massachusetts test two pairs of spectacles are used, each with a Maddox rod for the right lens only, one to produce a horizontal streak, the other a vertical. The light is set in a small opening in a chart, which is drawn to resemble a house with the light in a window. This house-chart conforms to a definite scale so that, if the streak is seen outside of a specific area, it indicates what is considered a significant degree of muscle imbalance. This test is made at a distance of 20 feet, and a similar one with a small block and a pinpoint of light is made at 16 inches.

While some authorities recommend this test for muscle balance in the central position, others prefer the cover test.

Convergence can be tested by having the person watch a pinhead slide along the edge of a rule toward the bridge of the nose. The rule is placed with the zero end against the side of the nose, slightly below eye level. Normally, the approaching pinhead can be watched until it is about three inches away, when the eyes will be seen to diverge or the person will complain of seeing double or of being unable to continue looking at it.

Color-Vision Tests.—Tests for color vision should be such as not to necessitate the naming of colors. As extensive research is under way on the development of satisfactory color-vision tests, it is not possible at this time to make conclusive statements on this subject or to recommend specific types of tests. To date, the most accepted

types have been those in which: (a) Colors must be matched; and (b) patterns formed by colored dots must be distinguished from a background of similar colored dots. Matching tests have the disadvantage of having to be made with materials which become soiled and discolored through handling, while the pattern type may not offer true colors. Lighting is extremely important in color-vision testing, and new recommendations undoubtedly will call for a specific intensity, color, and arrangement of light.

Depth-Perception Tests.—When included in screening batteries, the depth-perception tests most commonly employed are those designed to be used with a stereoscopic instrument. Such a test consists of cards bearing test objects so designed that, when viewed with both eyes through the lenses of the instrument, some of the objects should appear nearer than others.

Other simple depth-perception tests which do not require such elaborate equipment are, however, available. A very gross test can be made by giving the subject and the tester each a white-headed pin with a dark shank, mounted in a dark rod about the length of a penholder. The subject faces at about arm's length a black wall against which the tester holds his pin. The test consists of ascertaining whether the subject can touch with the head of the pin he is holding the head of the pin held by the tester. This is done in the direct line of vision and in several areas of the visual field, while the head is held still and only the eyes are moved. Normally it should be possible to do this at each point. Although failure in this test indicates very little, if any, depth perception, passing the test gives no evidence of the degree of stereopsis. The test is, therefore, supplemented by another in which the person is expected to recognize the relative nearness of white-headed pins projecting varying distances from a black, octagonal-shaped board viewed from a specific distance.

While these test materials can be easily improvised to give valid results, they must be designed according to scientific principles.*†

* Davidson, Morris, M.D. A Simple Device for Measuring Stereopsis. *American Journal of Ophthalmology*, Ser. 3, 18: No. 4: 356–359: April, 1935.

† Davidson, Morris, M.D. Traumatic Ophthalmoloplegias as Workmen's Compensation Problem. *American Journal of Ophthalmology*, Ser. 3, 18: No. 11: 1030–1035: November, 1935. (For description of Perlia Test.)

Stereoscopic Screening Devices.—At present there are two instrumental batteries of tests commonly used in screening. Both of these employ test charts, to be viewed in a stereoscope (an instrument with binocular lenses), designed to discover the standard of performance of such visual functions as central visual acuity (distance and near), muscle balance, fusion, depth perception, and color vision. One of these instruments is available only to industries, and only by specific arrangements with the manufacturing concern. The other may be used by any group.

Opinions vary as to the desirability of a stereoscope as an instrument for screening. Some ophthalmologists have found it satisfactory, when properly used by a well-trained technician, while others believe its use for screening is undesirable. As the findings need expert interpretation, such a device should be used only under the guidance of eye specialists.*

Group Tests.—Group tests owe their popularity to their economy of time. As is obvious, however, only a few of the screening procedures described can be given in a group. Even in making a Snellen test, much valuable information is bound to be overlooked in the simultaneous test of a group, since it is impossible to watch each person carefully, to see that all are fully co-operating, and to note signs of eye difficulty in reactions during the test. Further disadvantages include variations in the distances and angles at which the charts are viewed, and in the lighting in different positions in the room.

Follow-Up of Screening.—After the tests and observations are completed, those whose eyes seem normal should again be advised of the inconclusive nature of these procedures and urged to seek an eye examination if, at any time, they have any reason to suspect it is needed.

To those who seem to have deviations from normal, it should be explained that the screening procedures seem to suggest the presence of an eye difficulty; but that this can be determined only through a careful examination by a competent eye specialist who

* Further information on these devices and their use in schools and industries may be obtained from the National Society for the Prevention of Blindness.

will also know whether treatment is needed and, if so, of what type. Because of the popular misconception that glasses are the cure-all for eye difficulties, care should be taken not to imply that they are needed.

Interpretations of the findings resulting from tests are best made in a personal interview, which allows also for correlating the advice with discussion of general health, school progress, vocational guidance, or industrial placement. It also affords opportunity for learning of attitudes, reactions, or situations which may have bearing on the matter, and for discussing arrangements for the examinations. If possible, the individual should be referred to the family physician for guidance in selecting an eye specialist. When this is not feasible, a list of eye specialists or clinics may be given and, when necessary, the person may be directed to a social agency for financial assistance.*

When a personal interview is impossible a printed form is usually employed. This should be carefully prepared to give the desired information, without any of the undesirable implications as to certainty of the presence of an eye difficulty or its probable nature and treatment. Although the personal interview is usually more successful than the printed form in encouraging prompt action, the matter should not be considered closed even after plans are made. Many delays may occur, and further encouragement and guidance may be needed.

Eye Examinations

A comprehensive eye examination aims to discover the condition of the eyes and related structures, the degree of visual performance, and the underlying causes of any difficulties found. An examination by a well-qualified specialist may furnish important clues to disturbances of general health.

Scope of Eye Examination.—A careful examination includes: family and personal history of health and of eye difficulties; inspection of external and internal structures of the eyes and of

* For information on agencies assisting in such matters, apply to the National Society for the Prevention of Blindness.

surrounding tissues; and measurement of the various aspects of visual functioning. The cornea, anterior chamber and lens may be examined with a slit-lamp and binocular microscope; and the fundus, with an ophthalmoscope which illuminates the interior of the eye, permitting a careful inspection of the retina and optic disk. Palpation may be used to determine the hardness of the eyeball but, if abnormal intraocular tension is suspected, tension may be obtained through use of an instrument called the tonometer, which is placed on the cornea (after instillation of a local anaesthetic).

The diagnosis of a refractive error is made in terms of the type and strength of lens required to neutralize the error and permit sharp focusing of the image on the retina. For this a retinoscope may be used to determine what type and strength of lens will focus its light on the retina. This objective measurement is supplemented by the use of trial lenses to find the exact correction which gives the most comfortable and satisfactory vision.

To prevent accommodation from interfering with accurate measurement of refractive errors, it is often necessary to instill a drug called a cycloplegic in the eye before making a refraction. This relaxes the ciliary muscles and dilates the pupil. As accommodation is most active in youth, a cycloplegic is used chiefly with young people. When dilation of the pupil alone is desired, the drug used is a mydriatic. After the refraction is measured, a miotic may be instilled to neutralize the effects of whichever drug has been used.

Muscle balance may be tested in various ways. Measurement of abnormalities is made with prisms, the degree and type of defect being indicated in prism diopters. Tests are also made of fusion, and sometimes of depth perception and color vision. When the need is indicated, the fields of vision may be measured with an instrument called a perimeter, or with a tangent screen; both of these provide exact information regarding the functioning in the areas of the visual field.

Selecting an Eye Specialist.—It is obvious that such an examination can be obtained only from a qualified eye specialist and that the care and treatment of eye conditions call for a high degree of knowledge and skill. As the term "eye specialist" may refer to anyone who specializes in any aspect of eye care, it is well to define the

terms used to describe the major groups of workers in this field. They are:

Ophthalmologist and *oculist* are synonomous and designate a physician who has specialized in the treatment of eye diseases and optical defects. Such a person is, of course, licensed to practice medicine and surgery in all its forms, including the prescription of glasses when indicated.

Optometrist indicates a non-medical practitioner licensed to treat optical and muscle defects of the eyes without the use of drugs or surgery. He may prescribe glasses and give muscle exercises. Status may be designated by the initials O.D. (for Doctor of Optometry) or the word "optometrist" after the name.

Optician refers to a person who grinds, fits, and supplies glasses. This involves making facial measurements, selecting and grinding lenses according to prescription, polishing and fitting them into frames, and adjusting the frames to fit the wearer.

Orthoptist designates a technician trained under the guidance of the American Orthoptic Council and certified by this group to give orthoptics, under the direction of an ophthalmologist.

Long-Term Follow-Up

After the eye examination, assistance is often needed to encourage and guide the patient and family in carrying out the recommendations, and to plan and arrange for such continued help and supervision as may be indicated. Even in the simple matter of wearing glasses, people often need information regarding their correct use and the importance of periodic re-examinations and refitting of frames. Sometimes they need help in overcoming prejudice against wearing glasses.

Intelligent follow-up requires an exchange of information with the specialist and any co-operating agencies, at whatever intervals are necessary. Secondhand information received through patients, families or other laymen is seldom reliable and leads to many misunderstandings. Direct contacts with the examiner, medical social worker, or nurse on his staff, offer the best opportunity for ascertaining the nature of the problem and the advice given. Con-

tacts such as these offer opportunity for giving return reports of progress or new developments. When personal interviews are not feasible, written reports may be substituted. Similar arrangements should be made with any community agencies co-operating in providing care.

The scope of the follow-up needed will, of course, vary with the situation: the wishes of the doctor in charge, recommendations made, and needs of the patient and family. Often, interpretations must be made to families, employers, and other interested persons as well as to patients. This is especially true in the more serious types of eye conditions and those in which care and adjustments may be needed for a long period of time. Obviously, ethical standards, the doctor's wishes, and the understanding of the person addressed, should determine what information is given. The patient's wishes must naturally be considered in interpreting his problem to others.

In conditions of long duration, frequent encouragement is often needed to keep the patient under continuous supervision by the doctor, and to help him and the family to follow recommendations and to make necessary adjustments. When home treatments are ordered, a demonstration of proper techniques by a nurse using home equipment is often the most effective means of making sure that the recommendations will be properly carried out.

While office interviews will suffice for much of this follow-up, home visits are an invaluable supplement, since they make possible an understanding of the situation and of the family attitudes and resources that can be gained in no other way. In addition, demonstrations in the home are more effective than when given in the office.

Trachoma*

J. R. McGibony, M.D.

AUTHOR discusses succinctly and in popular language the incidence and control of trachoma.

OUT of darkness into the sunlit wonders of a world that can only be appreciated through vision have emerged many of the victims of an age-old scourge of man—trachoma. This has happened through the action of one of the amazing drugs made available by science in recent years and its application following study by physicians of the United States Indian Service.

Sulfanilamide has become one of the old-timers since the advent of all the new "wonder drugs" now producing such miraculous results in treatment of diseases and injuries among both military personnel and civilians. But only recently has the full story of the results of sulfanilamide in the control of trachoma been told and these results are little short of spectacular.

Trachoma is an infectious disease, probably caused by a virus, which affects the conjunctiva, or lids, and cornea, or lens, of the eye, producing pain, excessive tear flow, photophobia (sensitivity to light), and often partial or complete blindness. It can be diagnosed only by a physician competent to differentiate between its characteristic red, inflamed conjunctiva—with the extension of blood vessels into the cornea—and other acute eye conditions. Its spread is influenced by many factors; often involved are poor personal hygiene, overcrowding in the home, irritation due to smoke, dust and sand, excessive sunlight and use of common towels.

Trachoma has been an affliction of mankind since antiquity, particularly in such ancient seats of civilization as Palestine, Greece, Syria, Egypt and Indo-China, although it is said to be

* Reprinted with permission from the June, 1945, *Hygeia*.

endemic, or prevalent, over half the earth's surface. Estimates of its incidence vary from one third of the population in China to 98 per cent of the population in Egypt.

The disease was probably introduced into America by the early Spanish settlers in the sixteenth century, and it became a serious problem in Arkansas, Illinois, Kentucky, Missouri, Ohio, Oklahoma, Tennessee and West Virginia and among the Indians of the Middle and Far West. Before the introduction of sulfanilamide treatment there were probably about 75,000 cases in the United States, half of which were among Indians. It was the causative factor in a fairly large percentage of the approximately 200,000 to 250,000 blind persons in this country.

Old methods of treatment consisted of a multitude of procedures designed to hasten the production of scar tissue; these included scraping and other mechanical methods of expressing the strawberry-colored follicles from the conjunctiva, or the application of strong solutions such as copper sulphate, zinc or silver nitrate. None of the methods was satisfactory, as evidenced by the multiplicity of methods and the fact that the incidence of the disease remained as high as ever.

Present treatment, necessarily carried on under supervision of a physician, consists of administration by mouth of sulfanilamide in doses based on the body weight of the patient. Supervision is necessary, since indiscriminate use of the drug may produce serious consequences in its effect on the blood, kidneys and other organs of the body. The sulfanilamide is given over a period of eight to twenty days. Only occasionally, in a particularly obstinate case, is it necessary to repeat the course of treatment.

Remarkable progress has been made and there is every reason to hope that, with time, proper case finding, and sulfanilamide treatment, this crippling disease will be relegated to a place of unimportance. From a consistent average of almost one out of every four Indians examined being affected, the incidence has now fallen to about one of every twenty! In addition to the benefit to the individual, reduction in the incidence of trachoma has contributed to general economic welfare. In three years following the new treatment the number of Indians blinded by this disease—constituting a large relief load—was reduced by more than half. The same

reduction is being accomplished by public health officials, ophthalmologists and general practitioners throughout the areas in the United States where trachoma is endemic.

Because of the wide distribution throughout the world of American youths in the military services stationed and fighting in areas where trachoma is highly prevalent, it has become necessary to maintain close supervision and observation of returning troops to prevent reintroduction of the disease to the United States. This is being done with remarkable efficiency.

Medical Social Consultant Services and Relation to Other Agencies*

Alice Willoughby

DESCRIBES rôle of medical social consultant in a state-wide program of sight saving, prevention of blindness, and sight restoration.

THE medical social consultant in the State Division for the Blind of Washington is engaged in facilitating adequate, statewide plans for sight saving, prevention of blindness, and restoration of vision. To do this, she must help to make resources available to all those needing such services, and to co-ordinate both medical and social services so that the individual will receive effective care.

Not only must financial aid be available for those who need help in paying for such services, but there needs also to be an understanding of their personal and social problems which might interfere with the successful progress of treatment, and help must be given to the individual and to those serving that individual in the interpretation and solution of these problems.

Let us take, for example, the person with an eye condition such as glaucoma, who does not have the money to pay for an eye examination and who will put off going to the eye physician if the pain is not severe or if he is not alarmed by a sudden appreciable loss of vision. He may not know to whom he can turn for help, and perhaps does not realize the importance of following through with the doctor's recommendations after he has received competent medical advice. If blindness is to be prevented in such cases, it is necessary to get these people under the care of eye physicians as early as possible and to see that proper treatment is continued as long as needed. To accomplish this, it is necessary to make known

* To appear also in the *Washington State Nursing Journal.*

generally to the public the implications of this eye condition and the importance of early recognition and treatment. This involves a program of health education. It is also necessary to make known as widely as possible that there is help available in securing diagnosis and treatment, and how this may be secured.

There has probably never been such efficient widespread organization for bringing medical and social resources to the public as is possible today in the Federal, state and county welfare setup, but, to make it more widely used by the public for services, as well as for financial help, involves much additional interpretation to the public.

Hand in hand with such interpretation goes the continuous program of interpretation to the workers in the county welfare departments of the type of service needed by visually handicapped persons, so that adequate service is rendered whenever they seek it or whenever there is evidence that they may need such service. Interpretation is needed, also, for workers of other agencies who are most likely to come in contact with such individuals in the course of their regular work, to see that they are alert to recognize the needs of persons with visual handicaps. This means particularly the social agencies, the health agencies, and the rehabilitation agencies, all of which are concerned in helping people become socially adequate and independent.

There would seem to be in the State of Washington sufficient money to provide this care, and, although there may be some question as to whether adequate medical and social services are available for the present needs, such services may as time goes on be co-ordinated and developed to serve effectively all who need them. It is necessary, however, to strive continually toward securing better co-ordination and understanding of eye health and the social implications of eye defects in order to be successful in this state-wide program for the prevention of blindness.

It is also necessary for some one agency to concentrate on such a project. The Division for the Blind realizes its responsibility in carrying on such a program for the State of Washington, and is attempting to do so for the most part in helping and working with those agencies and workers, state and local, such as the county welfare departments, the public health nurses, and the teachers in

the schools, who come in direct contact with the individuals who need this help.

The restoration of vision and corrective eye treatment program for which State funds are provided through the Division for the Blind and the county welfare departments is an important field of activity for the medical social consultant. Persons seeking this help should request it of their county welfare department. The medical social consultant works with the county welfare worker, the medical eye consultant for the Division for the Blind, and others, to see that an adequate plan for treatment is made for each patient. However, the county welfare worker generally makes the plans for the eye examination and follows through with the doctor who is to give the treatment for arrangement of details of treatment and after-care, after authorization and interpretation have been given by the medical social consultant of the Division for the Blind. In this way, the county welfare worker can determine the financial situation and other needs and can bring to the aid of the patient those services which are available and will best serve him.

Another field of activity in which the medical social consultant must necessarily be concerned is that involved in the program of physical restoration which the State Department of Vocational Rehabilitation, with the aid of Federal funds, has now entered more extensively, especially that part of the program involving eye treatment and surgery, under which individuals are referred to the Division for the Blind. The Division for the Blind can now, under this program, provide not only for eye surgery but also for types of physical restoration for those blind individuals who need corrective care other than eye care to make them employable. In planning for such individuals, it is necessary for the medical social consultant to work closely with the Vocational Rehabilitation Agency. This coordination is facilitated by having a vocational rehabilitation placement agent as one of the members of the staff of the Division for the Blind. He discusses with the medical social worker plans for treatment to improve eye conditions or other defects of blind applicants for vocational rehabilitation, and the medical social consultant helps him throughout the process of planning and carrying out treatment and planning for employment suitable to the physical limitations of the individual concerned.

The area of activity in which the public health nurses are probably most interested is the program for the visually handicapped child, which the Division is trying to implement and co-ordinate with the work of the public health nurses and the teachers in the schools.

It is desirable that a careful and efficient survey be made at the beginning of each school year to find all those children in the classroom whose vision is seriously impaired or threatened, and that they be given special attention. Briefly, this attention would consist of such provisions as: adequate lighting without glare; large clear-type material which can be seen readily without eyestrain; supplementary auditory instruction; and attention to the problems of personal and social adjustment which may have arisen from the visual handicap. It is important that this help be made available at the beginning of the school year, and it should be based upon accurate knowledge of the extent and kind of service needed.

A scheme for a systematic survey of the schools which may be carried out most effectively has been outlined by the State Departments of Education and Health and the Division for the Blind. This plan involves an initial screening of her own pupils by the teacher at the beginning of the year, as a preparation for the year's work. She receives instruction and consultation from the school nurse concerning the method of performing the Snellen test for visual acuity. The details for this procedure are outlined in the vision testing booklet put out by the State Department of Education, the State Department of Health, and the Division for the Blind. This booklet may be obtained from the State Division for the Blind.

The teacher is the initial "screener" only, and when she finds a child who answers the following description she refers him to the nurse, who, in turn, follows through for further screening and a complete eye examination by an eye physician, as indicated.

The children referred by the teacher to the nurse are:

1. Those with visual acuity of 20/40 or less in one or both eyes.
2. Those with other symptoms of disturbance such as: (a) holding the head in a peculiar position when reading or while taking the vision test; (b) holding the book too close or too far away from the eyes when reading; (c) blinking continually when reading; (d) rub-

bing the eyes frequently; or (e) red eyelids, crusts on lids among the lashes, sties, swollen eyelids, watery eyes, headaches, nausea, dizziness.

The nurse may need help in securing the eye examination, either for financial aid to the parents or interpretation to the parents, and may call upon the County Welfare Department for the help of a social worker in securing this. Several County Welfare Departments have specialized workers to carry out the program for the blind and visually handicapped, and some have child welfare workers who are familiar with the needs of handicapped children. These workers can be of considerable assistance in helping the parents to realize the importance of an eye examination and to carry out any recommendations for care. In every case where the parents cannot pay for the eye examination, they should be informed that they can get help from the Division for the Blind through the County Welfare Department; and, if eye treatment or surgery is needed for which the parents cannot pay, this help can also be obtained from the same source.

The nurse should get the eye report from the examining eye physician, and, in order to facilitate this, a special form has been prepared by the Division for the Blind, which is distributed to the nurses, on request. This form is sent to the eye physician by the nurse. It is a check list and designed to give adequate information to the public health nurse and to the school as a basis for recommendation for sight saving, or, if necessary, for attendance in the school for the blind.

The Division for the Blind has requested that a copy of that eye report be forwarded to the medical social consultant, who will give the recommendation and interpretation of the need for sight saving to the State Department of Education. The supervisor of education for handicapped children of the State Department of Education will then send out the materials and instructions for the child's teacher and will follow up with supervision necessary to insure the service to the child.

Consultation in regard to the medical social needs of the child may be obtained from the medical social consultant by the nurse, the teacher, or the social worker interested in any particular child, and an attempt is being made by the medical social consultant to

follow through with the nurse or social worker to see that the child's health and social needs are being met. This may be done by a visit with the nurse to the school, observation of the child in the classroom, and discussion of his situation with the teacher, or by consultation with the social worker if she is working with a child; or, in some cases where it seems to be advisable, a visit with the nurse or social worker is made to the home. Obviously it is not possible for the medical social consultant on a state-wide program to visit each child, but it is desirable that she get enough opportunity to observe children and to consult directly with workers who have direct contact with the children to find out how the plans are working out and what the needs are in developing a more effective program for these children.

This is a brief outline of the program for the visually handicapped child. It will become effective only as it becomes a part of the thinking and planning of all school people and public health nurses in the State, and as yet it has by no means been practiced consistently in all parts of the State; but we believe it is sound and that we should all work toward carrying it out for the benefit of Washington children. It requires the united effort of the teachers, the public health nurses, and the social workers throughout the State.

Consultant service is given to the School for the Blind in seeing that children who need the type of educational methods provided at the School for the Blind are sent there, and that children leaving the school subsequently receive the follow-up services they need. In order to assure this service, the superintendent of the School for the Blind has agreed to send to the State Division for the Blind eye reports for all the children considered for admission, and to report all children who are leaving the school.

The child with better than 20/200 vision has a right to be educated as a sighted child in the school in his own community, and it is not desirable that he be segregated with a group of blind children and grow to think of himself as blind, but in most cases it is not possible for the child with 20/200 or less vision to get full benefit of his school life without the special techniques and equipment which are available only at the School for the Blind.

With the compulsory education laws of this State, the responsi-

bility is placed upon the public schools to see that a blind child attends school just as any sighted child is expected to do. After it is found that a child's eye condition requires that he should go to the School for the Blind, the final arrangements for admitting him are worked out between the parents and the field worker from the School for the Blind.

When the child leaves the School, the resources and services available within the county are usually brought to that child directly through the efforts of workers located within the county. These workers may consult with the medical social consultant for the Division for the Blind, who may be able to supplement local resources from others available within the State.

To summarize: The medical social consultant can help in the State program for the conservation of sight and prevention of blindness by working as an adviser and co-ordinator in the four areas described above, namely: (1) the restoration-of-vision and corrective-eye-treatment program; (2) vocational rehabilitation for the blind; (3) special services to the visually handicapped child in both the preschool and school period of life; (4) pre-admission and post-discharge services to students of the State School for the Blind.

The Partially Seeing Child in 1950*

Winifred Hathaway

THE author points out how the experiences calling for resourcefulness during the war period enrich future possibilities for the education of the partially seeing child.

IN every community there are partially seeing children. They form a group only when gathered together for special educational advantages—they are as individualistic as any other children. What has been done for them and how are they to be accounted for in the program of 1950 and succeeding years? A comparatively small percentage of them have been provided for in special classes equipped with correct physical surroundings and educational media suited to their needs. Here, under the direction of a specially prepared teacher, they carry on all their schoolwork requiring close use of the eyes—joining their normally seeing companions for other activities. For a few other partially seeing children, the division of special education of the state department of education arranges for the necessary materials and for assistance to their teachers, so that they may understand the problems involved and do their best to meet them. Thus a foundation has been laid.

During the war period, with its limitations on personnel and materials, teachers and pupils have shown their resourcefulness in devising ways of meeting the needs. This challenge to their ingenuity has had possibly unforeseen results, for parents and children were encouraged to use their resourcefulness in meeting general living conditions. In any program for 1950, the value of this experience cannot be lost sight of, for, in order to envision such a program, present conditions must be known and future ones

* Presented at the 91st Annual Convention of the New Jersey Education Association, Atlantic City, N. J.

estimated. First and foremost, will the number of partially seeing children be increased, decreased, or remain static in 1950? The answer depends largely upon whether prevention is not only written in letters large enough for all to read, but is actually carried out.

Where should such prevention begin? One answer has been given by the 35 states that have passed premarital laws in order to prevent the spread of those diseases that are in large measure responsible for much physical and mental impairment. Another answer comes from the 35 states that have passed laws requiring the examination of expectant mothers, so that those with syphilis may receive the necessary treatment to prevent transmission of the disease from the mother to the unborn child. Think for a moment of some of the children in classes for the partially seeing—that little boy with interstitial keratitis; that little girl with optic atrophy; those children with choroiditis and other eye difficulties usually caused by transmitted syphilis. Had the laws been enacted and enforced before these children were born, they would probably not have to attend a special class.

The health department of the State of Connecticut gives a report that cannot fail to be of interest. Since the premarital laws were passed in 1935, and the laws in regard to expectant mothers in 1941, the number of children having transmitted syphilis was reduced from 110 to 27. Even the 27 might have escaped had not some marriages taken place in states having no such legislation, or some expectant mothers failed to report for examination.

Again, think of the children with corneal scars that may have resulted from ophthalmia neonatorum, or corneal ulcers. In all probability few such children will be found in the class of 1950, because of the wonderful medical discovery of the sulfa drugs, penicillin, etc. You may not even find a boy who has a corneal scar because he was a bit reckless with a knife or met with some other accident. If the rest of the eye is capable of functioning, sight may be restored through corneal grafting.

How about the child with congenital cataracts? Research is being conducted in many parts of the world to discover whether nutrition is a predisposing factor in cataract and, if so, what can be done.

To be sure, it sometimes seems as though one hurdle were scarcely overcome before another appears. Indeed, two such hurdles in regard to some eye and other difficulties are even now causing concern. An Australian physician, Dr. N. McAlister Gregg, has brought to the attention of the medical world the fact that in many cases of congenital cataract, heart disease and other difficulties, the mother had had an attack of German measles early in pregnancy; the question arises as to the possibility that this disease may be an underlying cause of these ills. German measles has been given scant attention, but certainly this development calls for research.

Also, a peculiar form of eye difficulty somewhat similar to congenital cataract is being noted in children born two or three months prematurely. In the past, few such premature children have lived, but, with better understanding of the care of these infants, the death rate has been greatly lowered. Shall we find any of these children in our 1950 groups?

From the educational standpoint, what improvement in environment and in educational media may we look for in 1950? If promises hold, all school buildings, as well as homes, offices, and factories, will be better lighted than is at present the case. Probably a system of fluorescent lighting will be in general use, or a system combining fluorescent and incandescent illumination, together with germicidal lamps. By 1950, the present-day objections to fluorescent light will be overcome. Indeed, many of them, such as the stroboscopic effect, or flicker, have already been eliminated. For 1950 we may prognosticate that it will be difficult, if not impossible, to find an installation in which there are unshielded fluorescent tubes. By 1950 more flexible forms and shapes of lamps will be available so that the system may be adapted for homes, as well as for schools, offices, and factories.

How about that *bête noir* of classes for the partially seeing, the lack of material in type suited to the needs of the individual? Three programs of research are being carried on:

The Eye Institute at Dartmouth is working on a lens that will magnify print without distortion or other difficulties.

At Harvard University, another type of research is being carried on looking to the development of a mechanical device that will

magnify the type of any book by making it visible on a screen. There are, of course, machines that are used with microtype, but these have not proved satisfactory for use by the partially seeing child.

The third project is in regard to books in large type. The stumbling-block is, as you all know, that every school system selects its own books, and that so few are used in common by any number of schools that publishing companies feel there would be too little demand to warrant printing in large type.

Hope seems to spring eternally. Perhaps the greatest promise lies in the possibility of basic material that will be acceptable to all school systems. Such material could be printed in two editions—one in type suitable for the normally seeing, and the other in larger type for the partially seeing. Thus would be overcome the stumbling-block for the publisher and the present objection that the partially seeing have to use a text different from that used by the other pupils in the grade.

How about F(requency) M(odulation) in the 1950 program? With special wave lengths assigned to school systems it will be possible, following the very successful demonstration made by the city of Cleveland, Ohio, to have lessons given over the radio by experts in the various subjects. Thus, at a specified time, every child in the second grade of the school system would be listening to the same lesson in a room in the school building specially arranged for this presentation. Can you not see the partially seeing, the blind, or the otherwise handicapped child entering the room with the others, participating with them in the question period, and thus building up a natural social relationship? What Walter Damrosch has done for the school children of America in radio music can be duplicated in the social sciences, in literature, and in numerous other subjects. Such opportunities will make it possible to lessen the eye work for all pupils and to have the ears assume more of the burden of the educational program.

Dictaphones and typewriters will be in far more general use for the partially seeing than is at present the case, and the Talking Book will doubtless be made available to all who can profit by it.

A great part of the responsibility for that 1950 program rests with the colleges and universities in the preparation of teachers.

Is it not possible that by 1950 no teacher will be graduated without a basic understanding of the importance of physical, mental, and social abilities and disabilities in education; a basic appreciation of the processes of seeing—the eyes through which to see, the light by which to see, and the brain to interpret the visual messages received from the world outside the individual; a fundamental knowledge of the anatomy, physiology and hygiene of the eye, refraction and refractive errors, and common eye diseases; a recognition of the social and educational needs of those with defective vision, and a knowledge of how to meet them; skill in giving eye tests and in making the necessary observations of eye use?

In the graduating class of 1950 there will be teachers who may find in their groups partially seeing children for whom no provision can be made in special classes. But these teachers, because of their fundamental preparation, their knowledge of resources, and their own resourcefulness, will be able to meet the needs of the child in whatever situation he may be found.

In 1950, the newcomers of 1945 will be of kindergarten age. Shall we look for a decided decrease in the number of partially seeing children in this group? This depends on many factors: enactment and enforcement of premarital and prenatal laws in all states and territories of the Union; thorough medical examination, including an ophthalmological examination of all preschool children; more effective optical aids; illumination, quantitatively and qualitatively commensurate with the task that is to be performed and the eyes that are to perform it.

But, most of all, the answer depends upon how efficiently prevention measures are put into effect!

The One-Eyed Worker*

Joseph Minton, F.R.C.S., Major, R.A.M.C.

PRESENT-DAY knowledge of the rehabilitation of the visually handicapped worker is enriched by this discussion of what the one-eyed worker is able to do, and what the responsibilities are in safeguarding the remaining eye.

THE eye injuries of World War II and the ever-recurring eye injuries in industry are adding thousands to the present mass of one-eyed people. What is the position of the one-eyed men and women in the labor market? What jobs should they take up? In this paper I shall attempt to answer these questions.

In the course of my investigations in 1938 on the employment of the one-eyed worker in industry, I asked the Industrial Welfare Society to send out a questionnaire to its 750 member firms. This questionnaire asked for information on the work of one-eyed employees and their accident record. Replies were received from 398 firms which employed about 1,000,000 workers. The greater number of small firms stated that they did not require employees to pass eyesight tests, and that they employed one-eyed workers. Other firms representing the same branches of industry insisted on eyesight tests; some among these refused to employ one-eyed people; others selected them for special jobs only. From these replies I learned that one-eyed men and women are employed in mines, iron and steel works, in the manufacture of chemical and electrical goods, and also in the fine close work necessary in the manufacture of artificial silk yarn, woolen goods, etc. All firms which employed one-eyed workers were satisfied as to their efficiency at work and to their accident record.

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Types of One-Eyed People

One-eyed people can be divided into two groups: (1) those who have lost an eye since childhood; and (2) those who have lost the vision of an eye in adult life as a result of disease or injury.

The first group are in no way handicapped and have full confidence in the carrying out of their work. One finds men of this group employed in the building trades—working on ladders, on scaffolding, roofs, etc.; in the engineering trades, working on every type of machine; in the tool-making industry, where great precision is required; and doing clerical work in offices. They are just as quick and efficient as their fellow men who work with both eyes. Until now these men and women have suffered few disadvantages in the labor market. If their external appearance is normal, no comment is made unless a visual examination is carried out. In recent years many large industrial establishments have instituted pre-employment visual examinations. The Factories Act of 1937 provides that juveniles (14–16) be examined by the examining surgeon and that an eyesight test be carried out. It is obvious, therefore, that this group of one-eyed people will in future find greater difficulty in the selection of trades and professions.

The second group of one-eyed workers comprise those who have lost an eye during adult life. For the purpose of this investigation, in 1938, I examined 100 men and women who had lost an eye within the previous eight years. They were patients at the Royal Eye Hospital, London, where the investigation was carried out. An inquiry was then made into the following points: (a) trade and occupation when the accident to the eye occurred; (b) the time taken for readjustment to monocular vision; (c) period of enforced absence from work; and (d) the subsequent employment of the injured worker.

Trade and Occupation

The greatest number of eye injuries occurs in the mining industries and the metal and engineering industries. Most of the men examined had lost their eyes while engaged in such processes as hammering, chipping, boring or milling.

Time of Readjustment

After the excision of an eye the patient takes a little time to adjust himself to the new visual conditions. The usual errors in the estimation of distances are made by all during the first few weeks following the loss of an eye. Thus, patients will notice that when pouring tea from a pot they spill it; objects appear nearer to them than they are; they miss the handle of a door when trying to open or close it; they often tip ashes from a cigarette outside the ashtray, and so on. All these mistakes become obvious to the patient and he gradually notices them becoming fewer as his judgment of distances becomes more accurate. The period of the new visual adjustment takes from a few weeks to some months. Several of the men who were examined had regained confidence in the judgment of distances fourteen days after the excision. The ability to estimate depth is also gradually regained.

The degree of depth perception acquired depends upon several factors:

1. Intelligence and previous experience—thus, drivers, engineers, and fitters, who have had to judge distances and to carry out fine precision work before their accident, quickly acquire the ability of depth perception and depth estimation.
2. Age—young workmen adjust themselves to the new visual conditions much more quickly than older people, who take longer to regain their confidence and remain nervous and anxious especially when negotiating traffic in busy roads.
3. Sex—women are very slow in getting accustomed to the new visual conditions and their depth perception remains inaccurate for some time after the accident.
4. The loss of the dominant or master eye—the loss of the master (dominant) eye produces greater disability and delays adjustment to monocular vision.

I examined a number of men and women who, after the loss of the master eye, experienced difficulties at home, in the street and at work. The following history of two patients will be of interest. Both were engineers before their accidents. One man lost his right eye, which was the master eye. He was unable to return to fine precision work. The other man lost his left eye which was not the master eye. He returned to his work of drilling metal doors with a

drilling gun where the holes are often as small as one-sixth of an inch. He did this work very efficiently.

In assessing the loss of working capacity in a person who has lost the vision of an eye, it is important to ascertain whether the injured eye was the master eye. Investigations have shown that in 72 per cent of people the right eye is the master eye. Several tests can be used to ascertain whether the one-eyed person is left with the master eye. For example, there is the pointing test, which involves asking the patient to point quickly to a small, near-by object. Accurate pointing proves the presence of the master eye. P. C. Livingston has devised an instrument which, working on similar lines, enables one to find out if the one-eyed person is left with the master eye. The patient looks at a short white rod which is fixed at the end of a long bar. A movable black rod is situated midway between the patient and the white rod. The patient is asked to move the black rod laterally until it hides the white rod. The degree of movement is measured on a scale. The amount of movement from the median plane is small when the patient uses his master eye, and large in the opposite case.

Period of Enforced Absence from Work

Convalescence after the removal of an eye, together with the time necessary for the patient to regain confidence to return to work, should rarely exceed two to three months; yet I found during the course of my investigation that the greater number of men, after the loss of an eye, stay away from work for periods varying from six to nine, or even ten, months. A number of factors are responsible for this delay in the return to work:

1. Fear and lack of confidence to work under the new visual conditions. This may be a very important factor and causes the workman to stay away from work for several months. The examining ophthalmic surgeon has often diagnosed this condition as malingering. Such a diagnosis is the result of lack of knowledge of the psychological condition of a patient after the loss of an eye. Patients suffer from a genuine fear of injury to the other eye if and when they return to work. Their limitations in the field of vision and the mistakes they make in the judging of distances, heights, speed of vehicles,

etc., cause them to be conscious of the dangers which will confront them when they resume work. These men require careful rehabilitation. On many occasions I have advised such men to carry out simple tasks at home, such as knocking nails into a board, using a screw driver, etc. These simple exercises, combined with playing ball, have greatly accelerated the process of visual readaptation, thus enabling the injured men to return to work sooner. It would indeed be helpful if rehabilitation centers were established at eye hospitals and training centers. There the one-eyed men and women could receive training for specified work, and psychological treatment could be given when necessary.

2. The last and very important factor causing delay in the return to work is the unwillingness of firms to employ one-eyed workers. It should be made well known that the experience of welfare and safety departments attached to several large factories in this country has shown that one-eyed workers, after the initial period of accustoming themselves to monocular vision, are for practical purposes as fully efficient as two-eyed persons. Detailed accident statistics kept by the safety departments indicate that there is no evidence to show that one-eyed persons are more prone to accidents than the normal sighted.

The Subsequent Employment of the One-Eyed Worker

The greatest number of eye injuries occurs in the engineering and metal industries, and an inquiry has been made into the reemployment of one-eyed workers in these trades. Many firms refused to put the men back on their former jobs, indicating that it is dangerous for them to be in the engine or tool room. Such firms usually put the one-eyed workers on jobs in the storeroom or yard. On the other hand, a large number of engineering firms reinstate the one-eyed worker in his former job of grinding, turning or drilling. Some workers may find difficulty in the first few months. They may make mistakes in their work and often complain of headaches and of pain in the eye. In the course of time their work becomes satisfactory. The difficulties of the one-eyed worker begin when he loses his original employment. Other employers refuse to employ him in the machine rooms. The inevitable result is that many of them drift into other occupations.

Suitable Employment for One-Eyed Persons

I am often asked by parents of one-eyed children, as well as by labor managers of large industrial establishments, what occupations I consider suitable for one-eyed people. Of course this depends on the vision of the one good eye. If the vision of this eye is 6/6 or 6/9, the one-eyed person can follow comfortably all occupations involving close work such as the professions of medicine and dentistry, draftsmen in surveyors' or architects' offices, clerical work, watchmaking, jewel work, and even the fine close work required in the manufacture of artificial silk yarn or hose or the inspection and manufacture of electric light bulbs and radio valves. In the metal and engineering trades, the one-eyed men with 6/6 or 6/9 vision are fit for most jobs, but of course I would advise against constant close work and would suggest employment in the food and distributive trades, building trades, or many others. In this country one-eyed people with 6/12 vision can pass the driving test for motor vehicles. There are no official statistics as to car accident records of one-eyed people. In my experience there are no reasons against the employment of one-eyed drivers. If the vision of the one eye is less than 6/12, I would suggest gardening, farming or domestic service as the most suitable occupations.

The eye injuries of the war will add a large number of men to the mass of one-eyed workers. Many of these men will be anxious to return to their prewar employment. Will it be safe for them to do so in all cases? I would certainly say "No." The danger of injury to the remaining eye should always be considered when men wish to return to work in the engineering and metal trades. The men should be advised against returning to work which involves chipping, hammering or the drilling of metal. They should not be employed in underground work in the mining industry. Rehabilitation centers should bear this in mind when preparing the one-eyed worker for future work. The examining factory surgeons and industrial medical officers should always remember that, although one-eyed men and women are fit for most jobs, the safety of the good eye should be the first consideration.

The Forum

THIS section is reserved for brief or informal papers, discussions, questions and answers, and occasional pertinent quotations from other publications. We offer to publish letters or excerpts of general interest, assuming no responsibility for the opinions expressed therein. Individual questions are turned over to consultants in the particular field. Every communication must contain the writer's name and address, but these are omitted on request.

The Teacher's Part in the Sight Conservation Program*

Every teacher realizes the importance of vision in the lives of children and in its relation to learning. Much of what the child learns depends upon good vision. Yet each year many children are found who have been hampered in learning because of defective eyesight. It is important to find children with vision defects early in the school year, in order that corrections may be made and the child put on the pathway to learning without a handicap. Furthermore, the teacher's work will be more satisfying and less difficult when each child under her guidance can see to the best of his ability.

Giving a vision test to each school child early in the year and again, as indicated, during the following months is one simple way to find the nearsighted child. Directions for vision testing may be secured from the Michigan Department of Health. The teacher, who knows the child through day-by-day observation, is best fitted to make this test. Winning the child's co-operation and helping him to understand the meaning of this experience are of great importance. Through discussion, the teacher stimulates boys and girls to learn more about sight conservation.

It must be remembered that the results of the vision test do not tell the whole story. In such a test a child may show a visual acuity of 20/20 in each eye. Yet, when working at close range, the same child may through his behavior show evidence of visual difficulties. When the evidence in his behavior is supported by conditions suggesting the presence of eyestrain, there is sufficient reason for the teacher or

* Reprinted with permission from *Michigan Public Health*, September, 1945.

parent to refer the child for a medical examination regardless of the results of the vision test.

Behaviors of children may be indicative of visual difficulties. When suggestive behaviors occur frequently with obvious eye conditions, or with difficulties in school work, they are significant. Teachers and parents alike should be alert to the suggestive behaviors of children, and make a memorandum of the types of situations in which the recurrence of any one or more behaviors is noted.

There are many conditions which may be manifestations of visual defects. The student's ability to concentrate, to study and play without tiring easily, and his success in his relations with others should be observed. His reading habits and his ability in games, requiring both distant and near vision, are observable criteria for judging the necessity for further vision tests. Inflamed or watery eyes, congested lids, and styes are not to be ignored, nor are complaints of dizziness, headaches, or nausea.

The public health nurse works with teachers and community agencies and clubs, interpreting to them the needs of the school child, and encouraging them to find ways to secure correction of visual defects.

A screen vision test is a simple procedure, but it is part of an important program—sight conservation. Proper lighting and seating are vital. The co-operation of health personnel, school administrators, and teachers is necessary to discover defective vision among children and to provide an environment which will serve in the conservation of vision.

—EVELYN A. ELLINGSON, R.N.
Lansing, Michigan

Prevention of Blindness Activities in Brazil*

Since ophthalmia neonatorum is responsible for 40 per cent of our cases of infant blindness, our attention was chiefly focused on this condition.

After making an inquiry among all the maternity hospitals in São Paulo regarding their prophylactic methods for preventing ophthalmia neonatorum, we submitted the unsatisfactory results to the Secretary of Public Health. In order further to arouse his interest in the matter, we secured the support of the Pro-Infants Crusade and the Brazilian Legion of Assistance, which were our great supporters in this campaign.

The diligent Director of the Pro-Infants Crusade, Mrs. D. Perola Byington, accompanied us when we called on the Secretary of Public Health and on the Director of Public Health, to advocate the following measures:

1. Better instruction and super-

* Since attendance at Medical Social eye work course at Washington University, St. Louis, Mo., Winter of 1943–44.

vision of the service of obstetricians and maternity hospitals regarding the Credé method.

2. More widespread distribution to all health services of ampoules containing one-per-cent solution of silver nitrate.

3. Inclusion on the birth certificate of the question: "What prophylactic was used in the baby's eyes at birth?"

The Crusade also opened to us the doors of its child welfare centers, which we visited several times, distributing pamphlets and conducting a campaign for prenatal and infant care. It also gave us invaluable help in arranging a meeting with the midwives. Moreover, in a course on child welfare given by the Crusade, we were assigned a period to be used for giving instruction in prevention of blindness.

In order to facilitate our efforts, Mrs. Byington also introduced us to the Director of Health Centers of the capital (all of which were visited by us), and to the Director of Health Service of the Interior. We then called on the woman Secretary of Health, to advocate the measures proposed by us. We also called on Dr. Raul Briquet, Director of the School of Obstetrics, to obtain permission to impart instructions to the students (which we did).

Having learned of the great interest which the President of the Republic takes in the "Campaign for the Redemption of Infants," we went to Rio de Janeiro to enlist his support for prevention of blindness measures concerned with protection of the eyes of infants. We advocated the following program:

1. (a) A Federal decree making mandatory the use of the Credé method, to give added force to the practice, already compulsory in most of our states.

(b) Supervision of the enforcement of said law by the Health Services.

2. As one of the features of the Campaign for the Redemption of Infants is propaganda in favor of registration of all births, we suggested inclusion on the registration blank of the question: "What prophylactic was used in the baby's eyes at birth?" (in accordance with the custom of 30 of the states in the U. S. A.). This is an excellent method of teaching the care that should be taken of the baby's eyes.

3. We advocated also the enactment of a law prohibiting fireworks, a frequent cause of accidents to eyes; this seemed to us particularly important in view of the present shortage of labor, as well as of the waste of raw material so badly needed in other sectors.

To the Director of Services for Infant and Maternal Care, which the Campaign for the Redemption of Infants is going to establish, we shall submit documents attesting the superiority of the Credé method for preventing ophthalmia neonatorum. We shall also provide her

with one of the above-mentioned boxes containing ampoules of one-per-cent silver nitrate solution, the distribution of which to midwives and expectant mothers represents an ideal measure.

In addition, we are trying to conduct an educational campaign over the radio and through the newspapers. The small bulletin of the Technical Aviation School has published some cartoons featuring the prevention of blindness; the "Diarios Associados" and the Government Printing Office will print educational posters.

We gave lectures in the normal schools and social service schools on the subject of general measures for the prevention of blindness.

We have decided to train a social worker, in order that she may specialize in the prevention of blindness, to work in Bahia, where there are ophthalmologists interested in the problem.

We have shown everywhere the film of the U. S. National Society entitled "Eyes for Tomorrow."

We were successful in our thesis on prevention of blindness, which was presented to the São Paulo School of Social Service.

These, in short, are some of the things we have been working on, despite lack of funds from the organization which we represent.

MARIA CONCEICAO DE CARVALHO,
ANDREINA CAMPANELLA,
São Paulo, Brazil.

Note and Comment

National Social Hygiene Day, February 6, 1946.—As the world moves into a postwar era, the American Social Hygiene Association continues its fight against syphilis and gonorrhea. On Wednesday, February 6, 1946, National Social Hygiene Day will be observed throughout the United States. This annual event is dedicated to putting the vital problems of the eradication of venereal diseases before the people of America, so that they may safeguard their communities for the years beyond victory. The educational campaign to wipe out two of the major destroyers of vision in the United States—syphilis and gonorrhea—is of great importance to the prevention of blindness. It is to be hoped that all will join in the February observance.

British Film Features Sight Conservation.—The British Information Services have just released a two-reel, 16-mm., sound motion picture, "Your Children's Eyes," which is suitable for both school and adult audiences. It presents the anatomy of the eye; how the eye works and causes of nearsightedness and farsightedness; and diseases of the eyes and their cure, with the extraordinary skill typical of British documentary films. This motion picture, which requires twenty minutes' running time, is available for rent or for sale at nominal charges upon application to the British Information Services, 30 Rockefeller Plaza, New York 20, N. Y.

Industrial Health Conference.—Five professional organizations actively engaged in industrial health will hold their annual conference at the Hotel Sherman in Chicago, April 8–13, 1946. It will be the 31st annual meeting of the American Association of Industrial Physicians and Surgeons; the 4th annual meeting of the American Association of Industrial Nurses; the 7th annual meeting of the American Industrial Hygiene Association; the 8th annual meeting of the National Conference of Governmental Industrial Hygienists; and the 3rd annual meeting of the American Association of Industrial Dentists.

Sight conservation in industry will be an aspect of the industrial hygiene program in which the National Society for the Prevention of Blindness will participate. On invitation, the Society will maintain an exhibit booth, and Mr. Charles P. Tolman, the Society's consulting engineer, will be available for conferences on this important subject.

Chinese Children Suffer Wartime Eye Damage.—It is not surprising that blindness due to malnutrition has shown a marked increase in China, particularly among children. Reports have been received indicating that extreme inflation and shortage of food—as well as lack of knowledge as to what constitutes an adequate diet—are creating an increase in night blindness due to vitamin deficiency. In order to effect a reduction in the incidence of blindness, it is essential that treatment for trachoma, another serious cause of blindness in China, be intensified, that necessary food supplies be made available, and that a constructive campaign be undertaken for education of the public in the relation of diet to eye diseases.

Illuminating Engineering Society to Issue Comprehensive Lighting Handbook.—Plans for publication of a lighting handbook, most comprehensive and informative work of its kind ever attempted, have been announced by the Illuminating Engineering Society. The handbook, long contemplated by the I.E.S. as a major postwar project, will deal with every phase of lighting, from the pure physics of light to specific lighting recommendations for stores, offices, homes, factories and even for juke boxes and television studios, and will be covered in eighteen sections. The latest authoritative information on light sources, as well as on the measurement and control of light, will be included.

Among the eight members of the Board of Consulting Editors for the handbook are two members of the National Society's Board of Directors: Preston S. Millar and Dr. Conrad Berens.

Instruments and Supplies Needed in Philippines.—Lt. Brittain F. Payne reports that there is continuing, desperate need in the Philippine General Hospital for instruments of all kinds, books, medical journals and other scientific equipment, according to a

recent issue of *New York Medicine*. Arrangements may be made for packing and transporting donations either through the American Red Cross or through Dr. Gonzala F. Austria, care of the Philippine Commissioner, 1617 Massachusetts Avenue, N.W., Washington, D. C.

New Industrial Journal.—*Occupational Medicine* is a new periodical to be published monthly by the Council on Industrial Health of the American Medical Association. All phases of industrial medicine will be covered, with special emphasis on prevention of occupational and non-occupational diseases among industrial workers.

Eyes at Westinghouse.—Dr. T. Lyle Hazlett reports in the *Westinghouse Safety News* for August, 1945, that the eye protection program at Westinghouse has shown excellent results for the first half of 1945, scoring no loss of eyes. For this same period last year, five were lost. He attributes this gain to keener interest by management and workers, better medical facilities, and more complete safety organization.

Prophylaxis Against Ophthalmia Neonatorum.—The *Journal of the American Medical Association* states, in reply to two doctors who question the effectiveness of one per cent silver nitrate in preventing ophthalmia neonatorum in infants, that the Credé method of prophylaxis is still the standard method required by law in most states and should not be abandoned until certain proof of superior performance by a substitute method has been established. Occasional failures can be attributed to faulty applications or, in a few instances, to exceptionally prolonged labor, which allows actual bacterial invasion of the conjunctiva to take place prior to birth.

Accident Prevention.—Roy S. Bonsib, safety director of the Standard Oil Company (New Jersey), New York, N. Y., urges repair men at service stations to assume safe positions in inflating tires. He warns them never to face the tire directly, as the most serious accidents have occurred to the eyes through such practice. In using anti-freeze liquids, the men are cautioned not to taste this

so-called radiator alcohol, as the methanol or wood alcohol cannot be made non-poisonous; the system absorbs it rapidly and it may affect the eyesight, or even be fatal. These facts are included in part 3 of his article, "Accident Prevention in the Marketing and Distribution of Petroleum Products," which he has written for the *Industrial Safety Survey*, published by the International Labour Office in Montreal, Canada.

Florida Expands Sight Conservation Program.—The Florida Council for the Blind is making admirable progress in its drive for sight preservation. After the success of its "Sight Conservation Week," April 8–14, 1945, in which the public schools and many health organizations, colleges, and clubs participated, the Florida Council now plans a Prevention of Blindness Department. The Council, with the advice of the Eye Medical Advisory Committee, has adopted a program including study of the causes of blindness, finding in what field prevention lies, and putting into effect corrective measures. For those in need of such aid, eye examinations, treatment, surgery and after-care will be provided.

Exposure to Invisible Rays Harmful.—Evidence that exposure of the eyes to invisible ultraviolet rays of 300 to 365 millimicrons wavelength is harmful has been produced from experiments with baby chicks. Dr. Ernst Wolf of the Harvard Biological Laboratory, whose research work was sponsored by the American Optical Company, reports that while the eyes themselves show no obvious injury, exposure to rays of this wavelength delays dark adaptation and impairs visual function. This points up the need for visual protection by welders and their helpers, as well as by fliers, skiers, sun bathers, etc.

Sight-Saving Through Television?—A promising new field for saving sight may be found when the City Board of Education and the Television Department of the National Broadcasting Company have completed the experiment started this fall to adapt television to classroom education. These weekly, specially prepared programs, presented over WNBT, are being given to pupils of junior high-school level, in order to determine the type of program which will be most beneficial to teaching. The diversion of the eyes from close

work is deemed beneficial especially to children of school age. Of course, it is to be assumed that television will be free of flicker, and that the children will be placed at the correct distance from the screen.

Tennessee Reports on Sight Conservation Service.—Of 2,339 cases referred to the Sight Conservation Service from July 1, 1943 to June 30, 1945, 527 cases had total, occupational, or partial blindness prevented in one or both eyes. Glasses alone prevented loss of sight for 452 cases or 801 eyes; surgery or treatment prevented loss of sight for 75 cases or 126 eyes.

Limitation of Penicillin in Ophthalmology.—Professor Arnold Sorsby in a discussion at the October 11th session of the Section of Ophthalmology of the British Royal Society of Medicine described penicillin as a powerful agent but a limited one, in relation to the eye. According to Sorsby, it does not readily penetrate into the eye but is valuable for local application in external infections. It can be used locally where the sulphonamides fail since it is not inactivated by pus. In intraocular inflammation, the sulphonamides had not proved very helpful nor is it likely that penicillin will be very useful.

Ophthalmologist Honored.—For his essay, "The Etiology and Treatment of Blepharitis, a Study in Military Personnel," Lt. Col. Phillips Thygeson, M.C., A.U.S., a member of the National Society's Advisory Committee, won a life membership in the Association of Military Surgeons of the United States. The essay, submitted in the competition of 1945, was based on studies made by the Department of Ophthalmology, A.A.F. Regional Station Hospital, Drew Field, Florida.

Sight Conservation in New Hampshire.—The Sight Conservation Program of the New Hampshire Department of Public Welfare has been concerned with finding and treating glaucoma cases. The glaucoma project was brought to the attention of the public through the New Hampshire *Health News*, the local newspapers, and broadcasting stations. Miss Louise G. Sexton, R.N., consultant for the Sight Conservation Program, has arranged exhibits at the New

Hampshire State Medical Meetings, the Conference of Social Welfare, and the Cheshire County Fair. Planned talks on sight conservation were given to civic and service clubs as well as to educational and health staffs.

A sight-saving class was established in Manchester at the Webster School, with twelve students from the public and parochial schools. This is the first class for partially seeing children in New Hampshire.

Plans for Prevention of Blindness in Greece.—Eric T. Boulter, after a mission to liberated Greece to advise UNRRA in the field of blind welfare, reports that work is being started there for the vocational training of adults and the education of blind children. Plans are in hand to improve the country's ophthalmic medical service with the hope of reducing blindness, which is very high at present as a result of the war and the years of privation. Mr. Boulter, with information supplied by UNRRA medical workers, figured that there are at least 12,000 blind persons in Greece needing assistance.

Encouraging the Safety Habit.—According to the Personnel Superintendent of the Kimberly-Clark Corporation, a part of their eye health program is to sterilize each pair of used safety glasses and seal them in a fresh cellophane bag. This practice makes the worker feel he is getting a new pair of goggles each time, and encourages the habit of using them.

Blinking Women.—Sir Arthur Hall, Emeritus Professor of Medicine at the University of Sheffield, discovered in a study of blink-rates that although the blink-rate during conversation is about the same for both sexes, in reading aloud the average rate for females is more than double that of males—this ties in with the greater efficiency of females as readers. Also noted was the fact that the rate of blinking is much slower in carnivorous (aggressive) animals than in herbivorous (hunted) animals.

Alabama Sight Conservation Association Reports Progress.—Beginning in April, 1944, as a project of the Jefferson County Lions Club, this organization avoided duplicating the work of

official state agencies, other civic organizations, and other Lions Clubs. However, the Association's efforts were so effective that the program was unanimously approved at the State Convention of Lions Clubs, which pledged support. This move expanded the work of the Association into a state-wide organization that now has the support of other civic bodies and the co-operation and assistance of the State Department of Public Welfare, State Health Department, American Red Cross, Traveler's Aid Society, Crippled Children's Service, Vocational Rehabilitation Department of the State Department of Education, hospitals, and ophthalmologists.

The organization hopes it can extend its program so that no person in Alabama with defective vision will be neglected or lack assistance.

New Vision Standards Approved by Navy.—Naval Academy candidates with a slight degree of myopia are now accepted if they have 20/20 vision in each eye. Candidates for commission in the regular navy, staff corps candidates, and officers assigned to engineering duty or other specialized duty also had their minimum vision standards reduced. The new standards were set up after study of the excellent record of accomplishment during the war of those having moderate degrees of refractive errors.

Pioneer in Health Education.—Elizabeth Blackwell, the first woman physician of modern times, lost the sight of one eye when some water spurted into her eye from the syringe with which she was irrigating the eye of a baby with purulent ophthalmia. In spite of her handicap, she went on to found the New York Infirmary for Women and Children, the first hospital to be staffed entirely by women and to have a school of nursing; and long before health education, preventive medicine, and the Child's Bill of Rights had even been heard of, she was teaching healthful living and writing of the responsibilities of the medical profession.

Eye Research in Russia.—In the last twenty-five years, a number of institutions devoted exclusively to the study of the eyes have been established in Russia. In Moscow there is a laboratory of technical illumination of the Safety Institute for Workers; and in Leningrad, the technical illumination division of the Leningrad

Institute for the Protection of Work is engaged in studies of the physiology of vision.

Authors Read Own Books.—Interesting to sight-saving workers is the news of the new effort the American Foundation for the Blind is making to add to the knowledge and entertainment of the blind and, incidentally of those with very limited sight, through phonograph records. Now, along with the recording of their books on disks for the blind and the visually handicapped, some authors are reading a few chapters, or even the entire work, so that the blind may sense the author's personality through his voice. Authors who have assisted in this movement are Somerset Maugham, Jan Struther, Edna Ferber, John Kieran, Thomas Mann, Eleanor Roosevelt, Bertram Russell, and Christopher Morley.

Canada Studies Eyes of Eskimos.—In an earlier issue of the REVIEW, we reported on the Ophthalmologic Service Group who sailed on the *S.S. Nascopie* to the Eastern Arctic. Mrs. M. Moeller, Secretary of the Prevention of Blindness Department of the Canadian National Institute for the Blind, a member of that group, informs us that they were able to hold eye clinics at seven of the eleven ports of call and that Dr. Crewson examined the eyes of 206 natives. Of these, 126 had normal eyes. The eye conditions found in the remaining 80 were so varied that it was impossible to say that they were due to any one specific cause.

Dr. Crewson performed several operations, some on board ship, the others in port.

Mr. Tweedle refracted the eyes of 112 Eskimo and 27 whites. It was found that myopia was rare, as might be expected in a race who live out of doors and have a distance perspective.

The group have compiled cards for each case, for follow-up, and have recommended that another ophthalmologic service group be sent out next year.

Society Loses Valued Colleague.—We sadly report the recent death of Harry Guilbert, a tireless crusader for industrial safety, especially eye protection, and an active participant in the work of the National Safety Council, as well as of the National Society for the Prevention of Blindness. As a member of the Society's Indus-

trial Advisory Committee, he made many a stimulating and important suggestion, and it was through his good offices that the talking slide film, "The Eyes Have It," was made available to the Society for national distribution. In the past five years, almost 1,100 prints have been distributed, undoubtedly reaching millions of workers, especially during the war period. Thus, the film, as well as his many other achievements, remains a monument to his memory.

Current Articles of Interest

Psycho-Therapy in Hysterical Amblyopia, Dr. P. D. Giridhar, *Indian Journal of Ophthalmology*, July, 1945, published quarterly at 502, Narayen Peth, Poona City, India.

Dr. P. D. Giridhar reports the psychic effect which succeeds in the restoration of sight in hysterical amblyopia. Assuring the patient that the injection would certainly bring back her vision, he injects 1cc. of 1 per cent Saline, subconjunctivally, in each eye. This brings about the desired effect with no relapse in most cases.

Viewpoint of the Ophthalmologist, Lewis T. Buckman, M.D., *Seer*, March, 1945, published monthly by Pennsylvania Association for the Blind, Harrisburg, Pennsylvania.

The author mentions all types of glaucoma, but is mainly concerned with the most prevalent primary type. Problems in recognizing symptoms and complaints, and in giving proper medical and surgical treatment are discussed. Readers are reminded that glaucoma seldom affects a truly healthy person, and the disease might be more successfully treated if ophthalmologists would concentrate on treating the patient's general health as well as his eyes.

Use of the Cautery in Plastic Operations on the Eyelids, D. Simpson, M.D., Ch.B., B.Sc., *British Medical Journal*, September 29, 1945, published weekly by the British Medical Association, Tavistock Square, London, W.C.1, England.

The author reports the superiority of cautery over "the scalpel and stitch" in the repair of eye conditions where the purpose is to produce normal position of the lids. While his method is not commonly practiced, he feels his results justify recognition by more ophthalmologists.

The conditions treated were: ectropion of the upper and lower lids, entropion of the lower lid, symblepharon, distichiasis, trichiasis and congenital ptosis in children.

Dealing with Visual Problems in the Classroom, Lester R. Wheeler, *Elementary English Review*, October, 1945, published

monthly from October to May by the National Council of Teachers of English, 211 West 68th Street, Chicago 21, Illinois.

About 20 per cent of school children have borderline visual problems which do not show up in the routine school visual check-ups; approximately 80 per cent are farsighted when they enter school. Observation by the teacher will disclose symptoms of visual fatigue and other eye difficulties which may develop among the children. The teacher should, therefore, familiarize herself with the common visual defects and their symptoms. The author gives detailed suggestions for discovering, preventing, and correcting visual defects.

The Use of Insulin in the Treatment of Corneal Ulcers, T. R. Aynsley, *British Journal of Ophthalmology,* July, 1945, published monthly by the British Journal of Ophthalmology, Ltd., 24–27 Thayer Street, London, W. 1, England.

Insulin was given as drops in troublesome cases where the corneal ulcer did not respond to the usual methods of treatment, and sometimes as drops and by injection. In several cases there was no recurrence, and all cases showed improvement. The author feels that these results indicate the need for further research on the use of insulin in eye cases.

Cyclodiathermy in Secondary Glaucoma, M. I. Auerbach, *American Review of Soviet Medicine,* October, 1945, published bimonthly by the American-Soviet Medical Society, 58 Park Avenue, New York 16, New York.

The author believes that cyclodiathermy warrants the attention of ophthalmic surgeons, because: (1) it is a simple procedure, requiring no special instruments other than an apparatus for diathermic coagulation and an appropriate needle; (2) it is not dangerous; (3) it is frequently very effective; (4) it does not impede further operations if ineffective.

Of 52 operations performed on 49 patients who were observed for periods varying from 2 weeks to 2½ years, the immediate effect was favorable in the majority of cases.

Field Study of the Prevalence of the Clinical Manifestations of Dietary Inadequacy, William J. Darby, M.D., Ph.D., and D. F.

Milam, M.D., F.A.P.H.A., *American Journal of Public Health*, October, 1945, published monthly by the American Public Health Association, 1790 Broadway, New York 19, New York.

This paper is a summary of the physical findings which were studied during a twelve-month nutrition survey of a representative sample of the rural population of Alamance County, North Carolina. One of the conclusions is that, in such a population, reported signs of early deficiency states, including biomicroscopic changes in the eye, are not considered specific for malnutrition and thus cannot be used alone to determine the nutritional status. This, however, does not disprove the value of such diagnostic signs in a group with a genuinely low nutritional level, as may be found in the Orient and war-torn areas.

Is Congenital Blindness Preventable? Arnold Sorsby, M.D., F.R.C.S., *Mother and Child*, October, 1945, published monthly by the National Baby Welfare Council, 29 Gordon Square, London, W.C.1., England.

Dr. Sorsby sees the problem of eradicating blindness as being, not in whether blindness is preventable, but, rather, in how much blindness is being prevented, how much could be prevented by the full exploitation of available knowledge and resources, and what still remains to be done to blot out blindness completely. Finding that the results of preventing blindness in school children have been very successful in London, he warns against complacency, but forecasts that there will be a decided decline of school-age blindness, not only in cases infective in origin, but in those which now compose two-thirds of the causes of blindness in the schools—those arising from congenital malformations and inherited diseases. Much is to be done at present throughout all of England, as has been done in London to prevent blindness, if a time is to be reached when blindness is completely blotted out. Gaps must be filled in the health service, and research undertaken on the causes of congenital malformation and inherited disease, with emphasis on the study of genetics and transmitted maternal disease.

The Diagnosis and Treatment of Trachoma, Lt. Col. Phillips Thygeson, M.C., A.U.S., *Military Surgeon*, November, 1945, pub-

lished monthly by the Association of Military Surgeons of the United States at Washington, D. C.

More important than treatment is the diagnosis of trachoma, since the sulfa drugs produce satisfactory results. Of the 19 cases studied, the author believes that 9 were infected prior to induction, which would indicate that this condition had not been previously recognized by Army or draft board examining physicians. From this study there is evidence that penicillin has no effect on the trachoma virus.

The Neurological Approach in General Medicine, Foster Kennedy, M.D., F.R.S. (Edin.), *New York Medicine*, November 20, 1945, published twice a month by the Medical Society of the County of New York, 2 East 103rd Street, New York 29, N. Y.

Finding medicine often a pattern compounded of slogans and simple equations which do not equate, rather than a system of observation and thought, Dr. Kennedy complains that many neurotic cases are mis-diagnosed, and terms such as "neurasthenics," or "schizoids," abused. He shakes his head over the North American habit, medical and lay, of flooding the human system with water. As he points out, in health, water-salt balance and capillary permeability are well controlled, but tissue edema—especially brain edema—is often the cause of brain-disease patterns varying from inertia and malaise to migraine and temporary blindness due to edema of the optic nerves. In fact, far more cases of sudden monocular blindness as a result of retrobulbar neuritis are caused by allergically induced watery swelling of the optic nerve, tightly held by its vaginal sheath, than are due to the incidence of disseminated sclerosis.

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